MetroSafe
Louisville Emergency Communications Network

CAD and Mobile Project

February 7, 2007

Background

- January 2003 Louisville Metro Merged with an area covering 365 Square miles and a population of over 700,000

The Vision

- All City and County Public Safety Communication Services consolidated into one coordinated public safety agency called Metro*Safe*

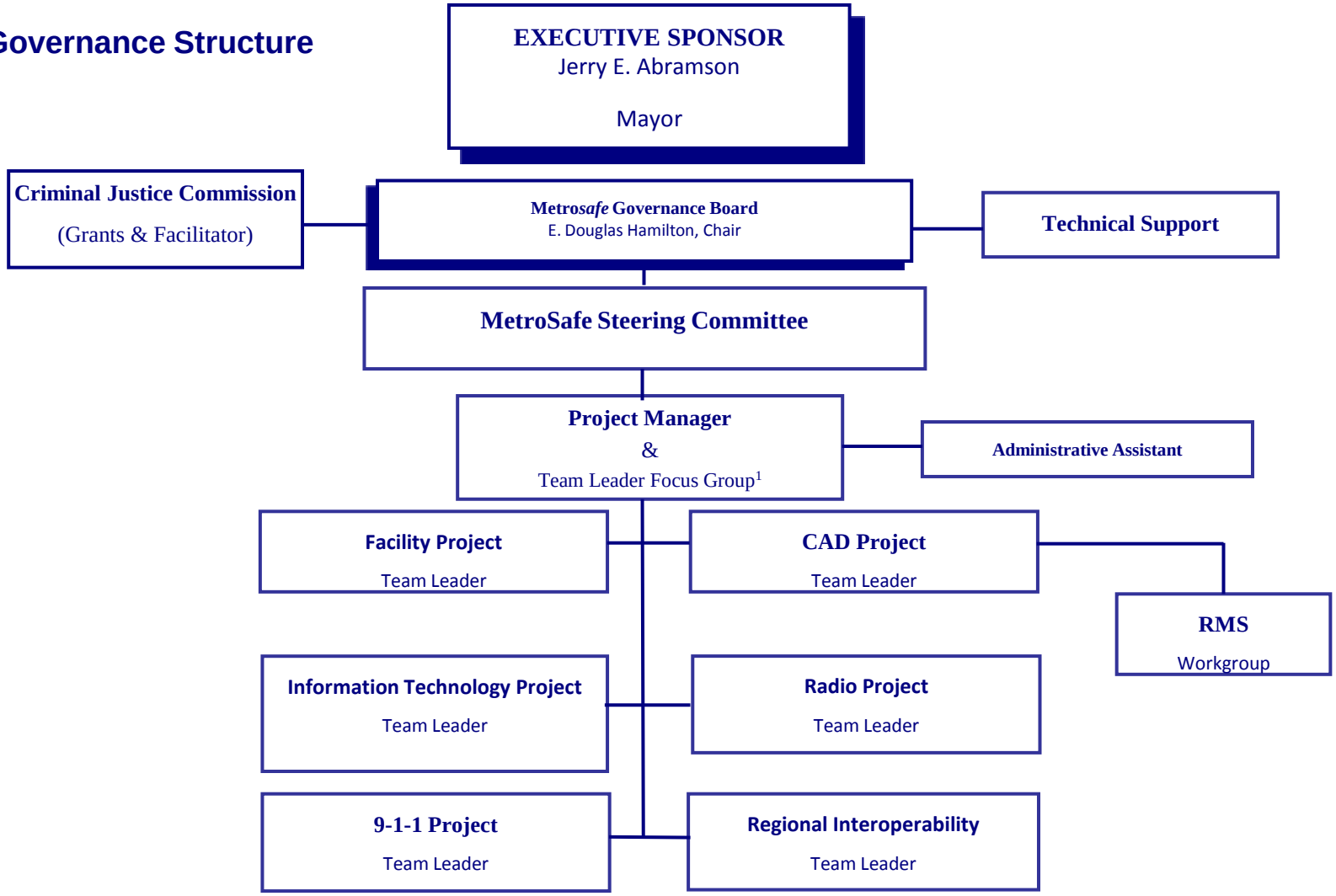
- Launching an aggressive program to update its public safety radio communications and computer aided dispatch (CAD) systems

Metro*Safe* Organization

- E. Douglas Hamilton named Director
- Debbie Fox named Deputy Director
- Metro*Safe* Governance Committee Created
- Metro*Safe* Charter Adopted
- Metro*Safe* Committees Created

MetroSafe

Governance Structure



[1] *Project Manager & Team Leaders are responsible for updating agency directors and ensuring information flow in both directions.*

Metro*Safe* Committees

- Radio
- Facilities
- Technology
- CAD
- 911
- Interoperability

Metro*Safe* Scope of Work

- A consolidated communications center
- Highly available and redundant technology infrastructure
- A mobile radio and wireless communications network
- All 911 call taking and dispatch for police, fire, EMS, EMA, and local government radio
- An emergency operations center with the capacity for interoperability with all other Metro Government and surrounding state, county, and federal government organizations

A New CAD? Why?

- CAD project failed to go live
- CAD for Urban Police only
- Separate CAD for Urban and Suburban Fire, Urban and Suburban EMS, and Suburban Police
- **DO WE WANT TO GO THROUGH THIS AGAIN!!!**

CAD's Not Working!!

- Something bad has happended
  - Inconsistent recommendations
  - Intermittent reporting system
  - Poor support
  - No Interoperability
- Two different CADs
- We support technology instead of technology supporting us

We Started Looking for a new CAD

- Top Tier
- GIS-based
- User Configurable and User Friendly
- Highly Available
- Multi Agency
- Proven Established Solution with Interfaces and Mobile
- Current Large Metropolitan installations
- Regional Interoperability

We found the best CAD for our community!

- Intergraph was chosen

- Provided unique opportunities and abilities…

Keys To Our Success

Utilization of a dedicated project

core team !

RadioResource MissionCritical COMMUNICATIONS
April 2008

Photos courtesy city of Louisville, Ky.

Metro CAD

The Louisville metropolitan area achieves regional interoperability with a multiagency CAD system.

By Betsy Helm

On Jan. 6, 2003, the city of Louisville, Ky., and Jefferson County became Louisville Jefferson County Metro, one of the largest cities in America by population. Mayor Jerry Abramson solidified his commitment to public safety and security by formally introducing an initiative to create MetroSafe, a unified communications system for all emergency-response agencies in the community, including police, fire, EMS, the health department, local hospitals and others.

Given the homeland security and daily operational need to develop interoperability for first responders, Abramson and city officials wanted to proactively develop positive and long-term solutions to address the community's interoperability needs instead of waiting until a crisis. "We're the 16th-largest city in America, a community at the crossroads of three major interstates, a city with major shipping and logistics centers for the nation. In the aftermath of Sept. 11, the ability of emergency responders to communicate in a seamless and effective fashion is a crucial necessity," Abramson says.

"When we merged governments, we had nine separate dispatch centers covering the community. They might as well have spoken nine different languages, because the different radio frequencies prevented agencies from talking to each other, even when they responded to the same scenes. We knew we had to find a single dispatch system so our agencies could be sent to emergencies more quickly and so the agencies could communicate with each other once they arrived."

In 2004, MetroSafe opened a state-of-the-art consolidated communications/dispatch center, implemented with the assistance of a 2003 COPS interoperability grant. This allowed for faster and more efficient response to 9-1-1 calls. Louisville Metro Police, Louisville Fire Department and Metro EMS were the first three dispatch centers to move into the new facility. Also in 2004, Louisville was designated a federal homeland security Urban Area Security Initiative (UASI) jurisdiction, which along with funding from the Kentucky Office of Homeland Security, provided significant funding sources to assist in achieving regional public-safety interoperability goals. The goals included sharing emergency calls and incident information so police, fire and medical personnel in participating jurisdictions could access details of events. Officials wanted this capability to

In 2004, MetroSafe opened a consolidated communications/dispatch center.

enhance coordination of joint responses and allow police departments to collaborate on cases.

The Need

Unfortunately, a barrier to local and regional communications became apparent. There was no compatibility among CAD systems operated by the first three participating agencies, so the desired automatic sharing of calls and reporting information couldn't occur. One of the first projects of the community's homeland-security funding was implementing a single CAD system to serve multiple public-safety organizations. Interoperability was the primary concern as MetroSafe officials compared available CAD technologies. The new system had to support a large number of agencies while allowing each to maintain its own unique emergency-response procedures. The system also had to offer the flexibility to integrate communications with other organizations outside of MetroSafe. In addition, the new CAD had to be geographic information system (GIS)-based and provide compatibility with in-vehicle mobile solutions and records management functionality.

After interviewing CAD users representing several large public-safety operations, MetroSafe selected the I/CAD system from Intergraph. Live since late 2006, this system is successfully handling all 9-1-1 calls for Louisville Metro Police, Louisville Metro EMS and 19 fire departments. The implementation has included installation of mobile data terminals (MDTs) in 600 emergency vehicles and pilot testing a unified records management system (RMS). A GPS-based AVL system will soon be added to the network so that vehicles can be tracked in real time on the CAD. "The multiagency team worked to customize a system specifically for our needs in preparing to respond to emergencies," says Louisville Fire Chief Gregory Frederick. "We believe this is a very effective tool, both for us and for other responders."

Achieving Interoperability

Less than six months after implementation of the new unified CAD, MetroSafe was experiencing interoperability and improved coordination among the major public-safety agencies responsible for the greater Louisville metro area. The most significant enhancements in operations relate to the speed and efficiency that emergency calls are now routed to the appropriate responders. Under the new configuration at the communications center, 12 people handle incoming 9-1-1 calls. Each call-taker has been cross-trained to manage any type of emergency. All Louisville Metro 9-1-1 call-takers and emergency dispatchers for the first time work on a unified computer system that allows each to see the responding and available police, fire and EMS units simultaneously and manage the emergency response accordingly.

Streamlining the process required dispatching responders to emergencies. Previously, based on where a 9-1-1 call originated in Louisville Metro, 9-1-1 call-takers would transfer callers to a second person to obtain information about their service request, such as medical emergencies or fire department responses. Now, all call-takers are trained in emergency-medical protocols so that virtually all callers to 9-1-1 will speak with only one person. "Eliminating that additional step will save critical seconds. In a business where seconds count, we count seconds," says Doug Hamilton, director of MetroSafe.

"The simple fact that all first-responder agencies are represented in the same room has opened up communications among them; it's a lot easier for dispatchers to talk face to face," says Lt. Col. Joseph Johnson, deputy fire chief for McMahan Fire Protection District, explaining that this facilitates coordination of response, especially in multialarm events. Call-takers, dispatchers and personnel in the field agree that the GIS-based map-centric nature of the new system has been a huge leap forward in efficiency compared with the older text-based CADs. Dispatchers no longer have to know every street and alley in the city. A map shows them the incident location. In addition, a map helps the dispatchers visualize where crews are at any time.

Another vital capability of the system is that it has been programmed with the response procedures for each individual agency. For instance, one fire department may send an ambulance and a truck to every injury call, while another may dispatch only the ambulance. This enables the system to make a response recommendation to the appropriate dispatcher based on protocol. Ultimately, the dispatcher

decides what resources to send to the scene. MetroSafe has found the CAD contains a treasure-trove of valuable data that can be mined for analysis purposes. Supervisors are able to review every detail from the time a call comes in, to the time the dispatch is completed to determine if call-takers are asking the right sequence of questions and following appropriate assignment procedures. MetroSafe personnel believe this analysis functionality may shave seconds off the response time of every call.

In the interest of enhanced efficiency, MetroSafe integrated a resource management module into the CAD. Now in pilot testing, this application continuously monitors the allocation of available emergency vehicles and personnel across Louisville. It automatically alerts dispatchers to gaps in coverage areas and recommends where vehicles should be temporarily relocated to maintain desired response times.

LMEMS Director Neal Richmond expects the software to be another step in creating a high-performance EMS system. "The whole idea here is to execute a kind of pre-emptive strike, where we're always a few steps ahead of what's about to happen," Richmond says. "Instead of relying on guesswork or the skill and experience of an individual dispatcher, the computer keeps track of our ambulances and fly cars and moves them into position for the next medical emergency that's about to happen."

Since the new CAD went live, call-takers have reported more robust operations than were previously possible. During a major storm, for instance, when hundreds of calls were coming in, the older CADs couldn't keep up with the volume. Call-takers frequently had to write emergency details by hand in hopes of inputting them later, but that was too late to help the dispatchers and emergency personnel heading to the scene. The new system, however, assists the call-takers in managing multiple simultaneous calls with easy entry of notes and details.

On the streets, Louisville police officers, fire crews and emergency medical technicians have seen a positive impact from the new CAD system as well. Six hundred emergency vehicles were equipped with the I/Mobile application, which runs on MDTs in the cabs and interfaces directly with I/CAD to display the CAD map, incident location and call details onscreen for crews to review en route. This minimizes radio chatter by showing a driver the best route to the scene and providing a textual synopsis of all details recorded by a call-taker.

MetroSafe commanders say the MDT is invaluable when they are on the scene of major incidents. Rather than asking dispatchers to name the other responding agencies, the commander receives this information on the MDT screen and uses it to decide how best to deploy the resources allocated for that event. Plans are being made to equip another 800 – 1,200 emergency vehicles with the MDTs. These devices already have built-in GPS for AVL. Local fire and EMS agencies are making plans to activate the AVL functionality, which will wirelessly send vehicle status and location information to the CAD, in 2008. The dispatch system will show the locations of emergency vehicles in real time on the map display so that dispatchers know which is the closest available to handle a given call.

Expanding Interoperability

"MetroSafe provides the capability to serve as an emergency-communications hub for our entire region," Hamilton says. "The disaster along the Gulf Coast illustrates the importance of a multijurisdictional communications link." Based on the success of the CAD implementation, MetroSafe moved ahead with leveraging the system to bolster sharing case records among at least nine police departments operating in the Louisville Metro area. Several of the departments already have commercial or homegrown RMS, but there is no ability to integrate them and share data.

"We had to find a single dispatch system so our agencies could be sent to emergencies more quickly and so the agencies could communicate with each other once they arrived."

— Louisville, Ky., Mayor Jerry Abramson

On a pilot basis, MetroSafe has implemented Intergraph's I/LEADS RMS with a Citrix server to extend reporting and data capture capabilities to officers in the field. The RMS integrates directly with the CAD to record the details of police calls entered by call-takers or dispatchers. This information is automatically linked with appropriate case files in a centralized database. Citrix allows officers to access the RMS system on MDTs in their vehicles to review archived information relating to a case, address or individual.

This new approach to records management is already streamlining the activities of police officers in Louisville. Rather than writing notes in the field that will later have to be entered manually into the RMS, officers can enter case notes directly via the MDTs in their patrol cars. Just in the pilot phase, this capability has freed police headquarters staff from

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— Neal Richmond, LMEMS director

transcription duties. "Automated record reporting is really streamlining the process to where we have almost an entire unit of personnel free to do other policing-related activities," says Dana Spratt, service level manager for MetroSafe.

Spratt added that the new CAD has also become the centerpiece of the Louisville emergency operations center (EOC). During the 2007 Kentucky Derby, MetroSafe coordinated security events involving the British Secret Service, U.S. Department of Homeland Security (DHS) and local public safety in a pilot using an I/CAD module. This application enabled MetroSafe to establish emergency-response plans and contingency strategies in advance and assign responsibilities to participating agencies, even those only temporarily on scene.

With interoperability among participating Louisville Metro agencies achieved, the next step is to take advantage of the new CAD's flexibility to extend access to other organizations outside of MetroSafe, including public-safety access points (PSAPs) in surrounding counties. Talks are under way to integrate some aspects of their communications and dispatching operations into the central CAD so emergency activities can be monitored in Louisville as needed, especially in the case of a regional event.

In the near term, MetroSafe has been talking with the local public school system to link its closed-circuit surveillance cameras into the central CAD. Typically, access to live video is restricted to school security offices; however, major incidents such as the 1999 Columbine High School shootings in Colorado demonstrated that local police can benefit from seeing what is happening inside a building. These video feeds will be integrated with the MetroSafe CAD for viewing in emergencies.

Factors to Consider

Louisville MetroSafe considers the CAD implementation a success, primarily because it has achieved the stated objective of enabling interoperability among multiple public-safety agencies spanning the spectrum of police, fire and EMS. In offering advice to other organizations considering a similar implementation, MetroSafe recommends getting buy-in from government leaders and administrators in all relevant agencies to support the implementation. Also, leveraging positive working relationships with state and federal partners is essential to obtaining the funding necessary to develop and implement such an ambitious technology effort.

Public-safety administrators must thoroughly learn how the products work to help their agencies, and personnel must understand the benefits that will ultimately be achieved by using them. Administrators must remain open to making changes to traditional operating procedures. More than one Louisville MetroSafe agency enhanced its workflow after learning how procedures were handled by a sister department.

"With this investment, we're putting the 'one' in 9-1-1," Abramson says. "For the first time, your emergency call comes into one place, you deal with one call-taker, and your information is relayed through one computer system that all our emergency dispatchers can use to help you. It's a streamlined, team-oriented approach to emergency communications that will speed our response and save more lives."

Participation and commitment from all levels contributed to the smooth implementation and successful project. The dedicated project team of dispatchers, call-takers and first responders worked closely with the technical project team from technology services. In a major integration of this type, the opportunities to improve public-safety operations seem to be limitless. ■

Since 1988, Betsy Helm has served the Louisville, Ky., metro government in a variety of corrections and public-protection roles. As CAD project manager, Helm played a vital role in identifying and implementing a regional multiagency CAD to support the 9-1-1 communicators and first responders in the city of Louisville and Jefferson County. Under Helm's leadership, Louisville was the nation's first city to demonstrate its emergency capabilities to federal homeland-security officials. E-mail comments to editor@RRMediaGroup.com.

Louisville Metro Area Achieves Regional Public Safety Interoperability

INTERGRAPH'S COMPUTER-AIDED DISPATCH SYSTEM IMPROVES AGENCY COORDINATION IN THE LOUISVILLE METRO AREA

THE CHALLENGE:

In 2003, the City of Louisville, Kentucky, and Jefferson County were merged into one, becoming Louisville Jefferson County Metro, one of the largest cities in America by population. Given the urgent immediate homeland security and daily operational need to develop interoperability for the Metro's first responders, Mayor Jerry Abramson formally introduced an initiative to create "MetroSafe," a unified communications system for all emergency response agencies in the community, including police, fire, EMS, the Health Department, local hospitals, and others.

When Louisville Jefferson County Metro merged governments, they had nine separate dispatch centers covering the community, each with its own different radio frequencies. After merging four of the dispatch centers in 2005, MetroSafe opened a state-of-the-art consolidated communications center to handle dispatch for Louisville Metro Police, Louisville Fire & Rescue, and Metro EMS. The need for a single dispatch system soon became apparent, as there was no compatibility between the three agencies' computer-aided dispatch (CAD) systems. This prevented the agencies from talking to each other, even when they responded to the same scenes.

The new system needed to support a large number of agencies while allowing each to maintain its own unique emergency response procedures. It also had to offer the flexibility to integrate communications with other organizations outside of MetroSafe. In addition, the new CAD had to be GIS-based and provide compatibility with in-vehicle mobile solutions and records management functionality.

THE PROJECT OBJECTIVES:

- Implement an interoperable CAD system that would serve as a unified communications system for all emergency response agencies in the community
- Enhance coordination of joint responses within the Metro area
- Maintain each agency's unique emergency response procedures

THE SOLUTION:

After interviewing CAD users representing several large public safety operations, MetroSafe

PROFILE:

Name – Louisville Jefferson County Metro

Web site – www.louisvilleky.gov

The Louisville Jefferson County Metro is the 16th largest city in America – a community at the crossroads of three major interstates and a city with major shipping and logistics centers for the nation. As an organization, MetroSafe is a joint operation to consolidate communications for 911, the Louisville Metro Police Department, Louisville Fire and Rescue, 18 suburban fire districts, Local Government Radio, and Louisville Metro Emergency Medical Services. MetroSafe offers interoperability for all remaining 911 PSAPS, Jefferson County Sheriff's Office, suburban city agencies within Louisville Metro, as well as the 13 surrounding counties in Kentucky and Indiana.

KEY BENEFITS:

- Interoperability and improved coordination among the major public safety agencies of the Louisville Metro area
- Enhanced speed and efficiency with which emergency calls are now routed to the appropriate responders
- Customizable CAD system programmable to the response procedures for each individual agency
- GIS-based 'map-centric' CAD interface, helping responders clearly visualize and locate incident scenes

PRODUCTS USED:

- I/CAD
- I/Mobile
- I/LEADS

selected Intergraph's I/CAD system based on its capabilities and Intergraph's excellent track record with large CAD implementations. Currently, I/CAD is successfully handling all 911 calls for Louisville Metro Police, Louisville Metro Emergency Medical Services, Louisville Metro Fire Department, and 18 suburban fire districts.

Less than six months after implementation of the new unified I/CAD system, MetroSafe was experiencing interoperability and improved coordination among the major public safety agencies responsible for the greater Louisville Metro area. For the first time, all Louisville Metro 911 call takers and emergency dispatchers work on a unified computer system that allows each to "see" the responding and available police, fire, and EMS units simultaneously and manage the emergency response accordingly. The most significant enhancements in operations relate to the speed and efficiency with which emergency calls are now routed to the appropriate responders.

Another vital capability of I/CAD is it has been programmed with the response procedures for each individual agency. For instance, one fire and rescue department may send an ambulance and a truck to every injury call, while another may dispatch only the ambulance. This enables the CAD to make a response recommendation to the appropriate dispatcher based on protocol. Ultimately, the dispatcher decides which resources to send to the scene.

Call takers, dispatchers, and personnel in the field agree that the GIS-based 'map-centric' nature of the new system has been a huge leap forward in efficiency compared with the older text-based CADs. Dispatchers no longer have to know every street and alley in the city. The map shows them the incident location. In addition, the map helps the dispatchers visualize where their crews are at any given time.

Out on the streets, Louisville police officers, fire crews, and emergency medical technicians have seen a positive impact from the new CAD system as well. Specifically, they have more information at their fingertips. Intergraph has equipped 600 emergency vehicles with its I/Mobile application that runs on mobile data terminals (MDTs) right in the cab. The I/Mobile package interfaces directly with I/CAD to display the CAD map, incident location, and call details onscreen for the crews to review en route. This minimizes radio chatter by showing the driver the best route to the scene and providing a textual synopsis of all details recorded by the call taker.

Plans are being made to equip another 800-1200 emergency vehicles with the MDTs, already equipped with built-in GPS for automatic vehicle tracking (AVL). Local fire and EMS agencies are now making plans to activate the AVL functionality in the near future, which will send vehicle status and location information wirelessly to the CAD.

"With this investment, we're putting the 'one' in 911," Louisville Mayor Jerry Abramson said. "For the first time, your emergency call comes into one place, you deal with one call taker and your information is relayed thorough one computer system that all our emergency dispatchers can use to help you. It's a streamlined, team-oriented approach to emergency communications that will speed our response and save more lives."

THE FUTURE

On a pilot basis, MetroSafe has implemented Intergraph's I/LEADS records management system with a Citrix server to extend reporting and data capture capabilities to officers in the field. In the interest of enhanced efficiency, MetroSafe has asked Intergraph to integrate a resource management module from Deccan International into the CAD, enabling them to continuously monitor the allocation of available emergency vehicles and personnel across Louisville. Additionally, I/CAD has become the centerpiece of a pilot project occurring in the Louisville Emergency Operations Center. MetroSafe can establish emergency response plans and contingency strategies in advance and assign responsibilities to participating agencies, even those only temporarily on scene.

With interoperability among participating Louisville Metro agencies achieved, the next step is to take advantage of the new CAD's flexibility to extend access to other organizations outside of MetroSafe, including public safety access points (PSAPs) in surrounding counties. Talks are under way to integrate some aspects of their communications and dispatching operations into the central CAD so their emergency activities can be monitored in Louisville as needed, especially in the case of a regional event.

ABOUT INTERGRAPH

Intergraph Corporation is the leading global provider of spatial information management (SIM) software. Security organizations, businesses, and governments in more than 60 countries rely on the company's spatial technology and services to make better and faster operational decisions. Intergraph's customers organize vast amounts of complex data into understandable visual representations, creating intelligent maps, managing assets, building and operating better plants and ships, and protecting critical infrastructure and millions of people around the world.

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